



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
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MEMORANDUM

DATE: MAY 21 2009

SUBJECT: Region 5 Response to National Remedy Review Board Recommendations for the Ashland/Northern States Power Lakefront Superfund Site

FROM: Richard C. Karl, Director
for Superfund Division

A handwritten signature in black ink, likely belonging to Richard C. Karl, the Director of the Superfund Division.

TO: Kevin Garrahan, Acting Chair
National Remedy Review Board

EPA Region 5 has reviewed the recommendations of the National Remedy Review Board (the Board) for the Ashland/Northern States Power Lakefront Superfund Site, as were documented in a memorandum dated January 6, 2009. Region 5 appreciates the Board's input and will incorporate the Board's recommendations in the Proposed Plan and Record of Decision (ROD) for the Site, as appropriate. Specific responses to each of the Board's recommendations are outlined below. The Board's recommendations are in **bold** followed by the Region's response.

Treatment of Principal Threat Wastes

The definition of principal threat waste presented in the package is not consistent with EPA guidance. The Board recommends that the Region clarify what are the principal and/or low level threats as recommended in OSWER Directive 9380.3-06FS, *A Guide to Principal Threat and Low-Level Threat Wastes*. The Board recommends that the decision documents explicitly detail expectations regarding treatment of Principal Threat Wastes, including how such waste will be designated and under what circumstances treatment will occur. Including such detail will assist in describing how the remedy will use treatment to reduce toxicity, mobility, and/or volume of Principal Threat Waste.

Response: The Region considers the non-aqueous phase liquid (NAPL) at the site a principal threat waste (source material). The main contaminants at the site were derived from tar compounds which were generated by the former manufactured gas plant (MGP) including volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and polycyclic aromatic hydrocarbons (PAHs). In addition, "free product" derived from the tars is present as a NAPL and has impacted soils, groundwater and offshore sediments. Free product includes both light non-aqueous phase liquid (LNAPL) and dense non-aqueous phase liquid (DNAPL). The tar compounds and free product found their way into soil, groundwater and the bay sediments, and in underlying debris at Kreher Park. The Proposed Plan and ROD will specifically state that source materials (free product, NAPLs) are the principal threat wastes at the site. The decision documents

will state that treatment will be utilized to address the principal threat wastes whenever practicable.

The recommended cleanup alternative in the proposed plan will address soil, sediment and groundwater contamination at the site. For soils at the Upper Bluff/Filled Ravine and at Kreher Park, EPA is proposing soil alternative S-5A, *Limited Removal and Thermal Treatment*, which includes excavating the source materials and thermally treating them on-site (if feasible). For sediment in Chequamegon Bay, EPA is proposing sediment alternative Sed-6, *Dry Excavation, Dredging, Treatment and/or Disposal and Monitoring*, which includes removing the source materials (through a combination of dry excavation and wet dredging) and treating them (if feasible). For the Copper Falls Aquifer, which contains large quantities of source materials, EPA is proposing ground water alternative GW-9B, *Enhanced Ground Water Extraction*, which includes treatment of the source materials that are removed. Additionally, alternatives GW-3 and GW-6, *In-Place Treatment Using Ozone Sparge* and *In-Place Treatment Using Chemical Oxidation*, are being proposed as options to further enhance the remedy.

Contaminants of Concern, Media, Exposure Point Concentrations, Risk, and Preliminary Remedial Goals

The Board recommends that future decision documents include a more detailed discussion of the specific contaminants of concern (COCs), the media in which they are present, the exposure point concentrations and their associated risk. The Region also should include a discussion of what the preliminary remediation goals (PRGs) will be and the basis of their development.

Response: Although the materials presented to the Board did not contain the detailed information requested by this recommendation, such information was included in the RI Report. The ROD will contain a detailed discussion of the specific COCs at the site, the media in which they are present, the exposure point concentrations and their associated risk. Tables summarizing this information have not yet been created but will be included in the ROD. In the meantime, please see Attachment 1 for a detailed discussion of the extent of free product at the site and the extent of contamination at the site, including the range of concentrations detected for the COCs in each affected media at the site.

The primary contaminants at the Site consist of VOCs and SVOCs. Benzene is the most commonly occurring VOC. SVOCs consist predominantly of a group of PAH compounds. The most commonly occurring PAH is naphthalene. Metals and inorganics were also found but are sporadic and most were not considered significant COCs. The COC list was refined using toxicology, pathways and exposure.

Based on the results of the Human Health Risk Assessment (HHRA), PRGs were derived for soil and groundwater based on exposure scenarios that exceeded a cumulative cancer risk of 10^{-5} or a cumulative non-cancer risk of a hazard index of 1. PRGs for groundwater were derived from Wisconsin Administrative Code (WAC) chapter NR 140 groundwater quality standards for the most frequently occurring COCs. PRGs for free product were based on WAC NR 708.13, which states, "PRPs shall conduct free product

removal whenever it is necessary to halt or contain the discharge of hazardous substances...”

The Baseline Ecological Risk Assessment (BERA) concluded that the potential for adverse effects to ecological receptors other than the benthic community was limited. Since PAHs are the most widespread COCs at the Site and are the basis for most of the potential risk to ecological receptors, these were the focus of the BERA. It was determined that a PRG focused on PAHs in sediment would address potential risk from other Site COCs in sediment. Region 5 prepared a technical memorandum explaining the derivation of the sediment PRG, and that document will be included in the Administrative Record. The PRGs also were included in the Remedial Action Objectives Technical Memorandum in Appendix A of the final RI report. A discussion of the PRGs for all media will be included in the ROD.

Ecological Risks

In the materials presented to the Board and in the discussion that followed, the ecological risks the site poses were portrayed as minimal or undefined. The Board believes that ecological risk is a primary driver for the remedy. Because such risks exist, the Board recommends that the decision document and administrative record clearly provide support for the Agency’s conclusions regarding those risks and the risk reduction to be achieved by the preferred alternative.

Response: The Region agrees that ecological risk is the primary driver for the sediment portion of the remedy. Ecological risk, however, was not the main driver for the remedy for other portions of the site. As stated in the response above, Region 5 authored a technical memorandum describing EPA’s conclusion on the derivation of the sediment PRG. Dave Mount, Research Aquatic Biologist from EPA’s Office of Research and Development, Environmental Effects Research Laboratory in Duluth, Minnesota, assisted the Region with this effort. All of the Region’s conclusions on ecological risk will be included in the ROD and will be supported by documents in the administrative record.

Remedial Action Objectives

The preferred alternative presented to the Board includes a number of different options for some of the remedy components, but it does not include Remedial Action Objectives (RAOs) for all media, and only includes a numerical cleanup goal for contaminated sediment. The Board recommends that the Region’s decision documents include more specific information regarding the components of each element of the preferred alternative, and that both RAOs and numeric cleanup levels for COCs be established for each media. As an alternative to fully developing these specifications now, the Region could proceed toward an interim remedy rather than a final remedy. The NCP supports the use of interim remedies in instances where “the action is necessary to stabilize the site, prevent further degradation, or achieve significant risk reduction quickly.” A final remedy for the site could be selected later after the interim remedy is implemented and its effectiveness evaluated.

Response: The RAOs for all media were included in the Remedial Action Objectives Technical Memorandum in Appendix A of the Final RI Report. The Region will include more specific information in the ROD regarding the components of each element of the preferred alternative and how they relate to the RAOs. The ROD will include numeric cleanup levels for COCs in each media. If we do not have a specific cleanup number for a COC, the ROD will explain why. For example, the remedy includes a containment portion for contaminated soil areas; therefore, those areas will not have a numeric cleanup level for soil since the soil will not be removed for disposal and/or treatment.

In its recommendation, the Board suggested that the Region consider an interim remedy for the Site rather than a final remedy. The Region believes that sufficient data has been collected at the Site over the course of the past 15 years, and that, based on the thousands of samples collected at the Site over that time period, the nature and extent of contamination has been determined. The Region will therefore be proceeding with selection of a final remedy for the Site.

Purpose of Pump and Treat

Based on the information provided to the Board, it was unclear whether the purpose of the pump and treat component of the proposed remedy is containment or restoration. The Board recommends that the decision documents clearly identify this aspect of the remedy as either containment or restoration. The Board notes that, if hydraulic containment is chosen, then the Region, consistent with OSWER Directive 9234.2-25, *Guidance for Evaluating the Technical Impracticability of Ground-Water Restoration*, should include the rationale for the expected technical impracticability waivers in the decision documents.

Response: The purpose of the pump and treat component is to ensure the long-term management of a large waste management area at the site. The point of compliance will be at the edge of the waste management area. The goal is hydraulic containment within the waste management area and restoration of the aquifer outside the waste management area. The intent of the proposed remedy is to meet ARARs (MCLs) outside the point of compliance. Therefore, technical impracticability waivers will not be needed. The ROD will clearly identify the purpose of the pump and treat component of the remedy.

Non-Aqueous Phase Liquid

The preferred remedy the Region presented to the Board contains several technical options for treating/removing Non-Aqueous Phase Liquid (NAPL) contamination in the Copper Falls Aquifer. The Region stated that it will select the best technical option(s) during remedy design. Because the Region has not yet selected the final preferred alternative for NAPL treatment/removal, the Board is not able to adequately address the efficacy or cost effectiveness of the ground water remedy.

Based upon the information provided to the Board, about 90 percent of the risk the site poses is associated with waste product material (i.e., NAPL). The NAPL product is also considered contaminant source material, which should be addressed in a manner consistent with the NCP. The Region's preferred alternative includes dredging of both the source material and the contaminated sediment residuals. These residuals account for the other

10 percent of the risk. The cost estimates associated with the two dredging activities were unclear in the site review package. The Board recommends that the Region identify the cost differential between the removal of the NAPL product and removal of the contaminated sediments.

Response: In the feasibility study, neither the costs nor the volumes were broken out in this manner. The estimated costs for the sediment portion of the remedy were based solely on the total estimated in-place sediment volume of 133,906 cubic yards which includes both NAPL (free product) and contaminated sediments; separate volume estimates for the NAPL and sediments are not available. It is important to note that the remedy will need to remove both the free product and residual sediment in order to achieve the cleanup goals. Furthermore, it would be very difficult to separate the NAPL from the sediments, since they are co-mingled. During the RI investigations, NAPL (free product) was observed in sediments both as sheens and emulsions (globules). For all of these reasons, the Region does not believe it is necessary (or even possible, without a significant effort expended) to identify the cost differential between the removal of NAPL and the removal of the contaminated sediments.

Further Remedy Development Needed

Because the Region has not yet fully developed all elements of its preferred alternative (e.g., ground water restoration or containment, possible *in situ* ground water treatment, the role of monitored natural remediation in achieving the 9.5 ppm sediment PRG), the Board is unable to provide detailed comments on certain aspects of it. The Board recommends that the Region develop and identify the specific goals of the remedy and describe how decisions will be made during the decision making process.

Response: The ROD will identify the specific goals of the remedy. Additionally, the ROD will clearly define the elements of the remedy that require decisions during the pre-design phase and will clearly describe what those decisions will be based on. As discussed in a response above, the ROD will clearly identify that the purpose of the pump and treat component of the remedy is to ensure the long-term management of a waste management area at the site, with hydraulic containment within the waste management area and restoration of the aquifer outside the waste management area. In 2007, EPA's Superfund Innovative Technology Evaluation (SITE) program conducted a study on the possibility of using *in situ* groundwater treatment to enhance the breakdown of contaminants and to see if the treatment would enhance pumping in the upper bluff/filled ravine. The final SITE report is not yet completed, but the conclusions of the report will help determine whether *in situ* treatment is a viable option. This determination will likely be made during pre-design. In addition, a pre-design study will determine whether thermal treatment of contaminated materials is a viable option. Monitoring the sediments after dredging will be part of the final remedy to assure that the 9.5 ppm sediment PRG is met.

Sediment Action Performance Standards versus Remediation Goals

The Board recommends that, within the sediment component of the remedy, the Region define remedial action performance standards independent of sediment remediation goals.

Defining these two criteria separately should allow for realistic expectations and evaluations of remedy components.

Response: The sediment remediation goal for the site is 9.5 ppm. The Region is currently in preliminary discussions with the Wisconsin Department of Natural Resources and other parties regarding a cleanup based on performance standards. In addition, during these preliminary discussions, the Region has discussed the possibility of a cleanup based on a surface-weighted average concentration (SWAC). To do so, the Region proposes to clean up PAH-impacted sediment to achieve a certain SWAC. However, the actual performance standards will not be determined until the design phase. The ROD will include the sediment remediation goals, but the performance standards will be developed during the design.

Dredging Justification

The materials presented to the Board framed the remedy component of sediment removal as being driven by ecological risk concerns. The Board recommends that the Region consider whether the majority of the dredging could be characterized as source removal of product material. Such an approach would make the removal consistent with the Agency's Contaminated Sediment Remediation Guidance for Hazardous Waste Sites. The balance of the remedy's sediment portion would be justified as ecological risk reduction.

Response: The Region agrees with the Board's recommendation. The ROD will characterize the majority of the dredging as source removal, consistent with the Agency's guidance.

Dry Dredging

The Region identified dry dredging as the preferred alternative for dredging the product waste distributed within the wood waste material. The Board notes the difficulty that wet dredging poses, especially in light of the associated potential for contaminant releases during the operation. Therefore, the Board supports dry dredging of the contaminated overburden material and underlying product to the extent practical (200 feet from the shoreline, as presented).

Response: The Region thanks the Board for its support of dry dredging for the near-shore materials in the sediment portion of the remedy.

Backfilling in Lake Bed

The material presented to the Board stated that a cover material (fish mix) will be used to backfill after dredging in the lake bed. The materials presented to the Board did not clearly identify the need for backfilling and the material being used to backfill implies that backfilling is being done for habitat enhancement. In the presentation to the Board the Region stated that the backfilling was needed for lake bed stability. The Board recommends that the decision document present the necessity of backfilling as an appropriate component of the remedy (e.g., backfilling to achieve lake bed stability).

Response: The Region agrees with the Board's recommendation. The ROD will clearly state that backfilling with a cover material is needed as a component of the remedy for lakebed stability. The fact that the cover material also promotes an enhancement for wildlife habitat is merely an added bonus to the project.

Institutional Controls

The package presented to the Board did not provide detailed information on the types of institutional controls (ICs) that will be required for soils, ground water and sediments. The Board recommends that the Region provide detailed information in the decision documents on use restrictions and areas requiring controls. Also, it would be helpful for the decision documents to identify the IC implementation measures and specify the entity(ies) responsible for implementing them.

Response: The Region agrees with the Board's recommendation. ICs (in the form of restrictive covenants) will be implemented to restrict future site use and prohibit the use of site groundwater at the upper bluff and Kreher Park where contaminants remain in the subsurface. Groundwater use restrictions for shallow groundwater in contained areas will be required. The ROD will provide detailed information on the types of ICs for the Site and the parties responsible for implementing them.

Applicable or Relevant and Appropriate Requirements

Information presented to the Board suggests that some potential Applicable or Relevant and Appropriate Requirements (ARARs) (e.g., state soil cleanup standards, maximum contaminant levels) may not be attained. The Board recommends that the Region clearly identify in the decision documents which ARAR(s) may need to be waived and the basis for the waiver(s) plus the information supporting the waiver(s).

Response: The Region does not believe that ARARs will need to be waived. The Region will clearly identify in the ROD that ARARs will be met.

Soil Removal and Preliminary Remediation Goals

The Board recommends that future decision documents include a more detailed discussion of what the unlimited and limited soil removals for Kreher Park and Upper Ravine area will include and/or not include and how they will relate to both the PRGs and achievement of the RAOs.

Response: The Feasibility Study defined certain areas in Kreher Park and the Upper Bluff/Filled Ravine as possible continuing sources to the contamination at the Site. These areas, based on sampling results, were the most highly-contaminated. When evaluating potential remedies for soils in Kreher Park and the Upper Bluff/Filled Ravine, the Region looked at unlimited removal (i.e., digging up all the contaminated soil) and limited removal (i.e., digging up only the most highly-contaminated soil). The Region believes that limited removal will achieve the RAO and will likely (in time) meet the PRG. The unlimited removal option would also meet the RAO and PRG but would likely double the cost of the cleanup and be more difficult to implement. The Region will include a more detailed discussion in the ROD regarding what the unlimited and limited

soil removal options do and/or do not include and how they relate to achievement of both RAOs and PRGs.